

What is claimed is:

1. A composition comprising:

(a) a sulphur free reaction product of:

5 (i) a hydrocarbyl substituted aromatic compound containing an acidic group selected from the group consisting of a carboxylic group, a hydroxyl group and mixtures thereof; and

(ii) an organic nitrogen-containing base reacted with the acidic group; and

(b) an oil of lubricating viscosity.

10

2. The composition of claim 1 further comprising at least one other performance additive selected from the group consisting of dispersants, antioxidants, foam inhibitors, demulsifiers, friction modifiers, and viscosity modifiers.

15

3. The composition of claim 1, wherein component (a) is present at about 0.01 wt % to about 40 wt %; the oil of lubricating viscosity is present at up to about 99.99 wt %; and wherein other performance additives are present at 0 wt % to about 30 wt % of the composition.

20

4. The composition of claim 1, wherein the total sulphur content of the composition is below about 0.5 weight percent; wherein the total phosphorus content of the composition is below about 0.07 weight percent; and wherein the total sulphated ash content of the composition is below about 1.5 weight percent.

25

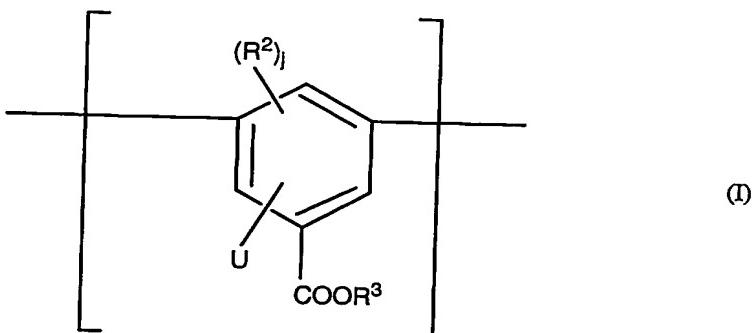
5. The composition of claim 4, wherein the total sulphur content is below about 0.1 weight percent; wherein the total phosphorus content is about 100 ppm or less; and wherein the total sulphated ash content is below about 0.08 weight percent.

30

6. The composition of claim 1, wherein (a)(i) is at least one member selected from the group consisting of (1) an oligomeric reaction product of an

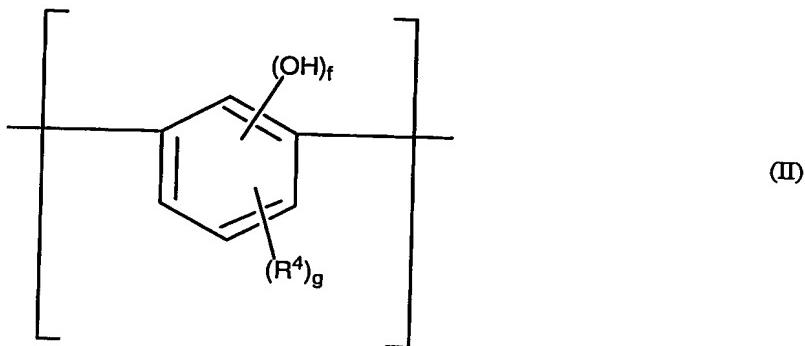
hydrocarbyl-substituted phenol, an aldehyde, and a carboxyl-substituted phenol; (2) an oligomeric reaction product of a hydrocarbyl-substituted phenol, an aldehyde, and a carboxyl-substituted phenylamine; (3) a hydrocarbyl-substituted, carboxyl-substituted phenol; (4) a hydrocarbyl-substituted, carboxyl-substituted phenylamine; and (5) an oligomeric reaction product of an hydrocarbyl-substituted phenol and an aldehyde.

7. The composition of claim 6, wherein (a)(i)(1) or (a)(i)(2) is a substantially linear compound comprising at least one unit of the formula (I)

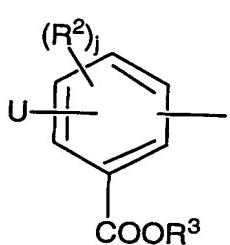


10

or the formula (II)

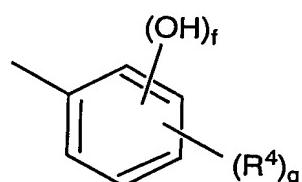


wherein each end of the compound is terminated by a unit of the formula (III) or the formula (IV)



15

(III)



30

and wherein the units of the compound are linked by divalent bridging groups which may be the same or different for each linkage; U is a hydroxyl group for (a)(i)(1) or is selected from the group consisting of $-\text{NH}_2$, $-\text{NHR}^1$, $-\text{N}(\text{R}^1)_2$ and mixtures thereof for (a)(i)(2) wherein R^1 is a hydrocarbyl group containing 1 to 5 carbon atoms; R^2 is a hydroxyl or a hydrocarbyl group and j is 0, 1 or 2; R^3 is hydrogen or a hydrocarbyl group; f is 1, 2 or 3; R^4 is a hydrocarbyl group or a substituted hydrocarbyl group and g is 1, 2 or 3 provided that at least one R^4 group contains 8 or more carbon atoms; and wherein the compound on average contains at least one unit of formula (I) or (III) and at least one unit of formula (II) or (IV) and the ratio of the total number of units (I) and (III) to the total number of units of (II) and (IV) in the compound is about 0.1:1 to about 2:1.

8. The composition of claim 6, wherein (a)(i) is an alkyl-substituted salicylic acid.

15

9. The composition of claim 1, wherein (a)(ii) is at least one member selected from the group consisting of (1) an amino-containing imine or a reactive equivalent thereof; (2) ammonia or a reactive equivalent thereof; (3) a monoamine; (4) a polyamine; (5) a nitrogen containing heterocycle ; (6) an aminoalcohol; (7) a tetraalkylammonium salt; and (8) a non-heterocyclic aromatic amine.

20
25 10. The composition of claim 9, wherein (a)(ii)(1) is at least one member selected from the group consisting of guanidine, aminoguanidine, 1,3-diaminoguanidine, acetamidine, formamidine, benzamidine, 3- and 4-amino-benzamidine, and reactive equivalents thereof.

11. The composition of claim 9, wherein (a)(ii)(3) is a hydrocarbyl substituted primary, secondary or tertiary monoamine or mixture thereof.

30

12. The composition of claim 9, wherein (a)(ii)(4) is an alkylendiamine, a polyethylenepolyamine, or a mixture thereof.

13. The composition of claim 9, wherein (a)(ii)(5) is a pyrrole, a pyrrolidine, an imidazole, an imidazoline, a piperazine, a pyrazole, an oxazole, a pyridine, a piperidine, a pyrimidine, a purine, a benzotriazole, a 1,2,4-triazole, a quinoline, an isoquinoline, a carbazole or mixtures thereof.

5

14. The composition of claim 9, wherein (a)(ii)(6) is an aminoalcohol containing 1 to 6 hydroxyl groups, 1 to 8 amino groups, and 2 to 50 carbon atoms.

15. The composition of claim 14, wherein the aminoalcohol is a monoalkanolamine, a dialkanolamine, a trialkanolamine or mixtures thereof.

16. The composition of claim 1, wherein component (a) is free of metal.

17. A process for the preparation of the composition of claim 1, comprising:
15 (a) heating reactants (a)(i) and (a)(ii);
(b) optionally holding the product of step (a) under vacuum; and
(c) adding the product of step (a) or (b) to an oil of lubricating viscosity.

18. A product prepared by the process of claim 17.

20

19. A method for lubricating an internal combustion engine, comprising supplying to the engine the composition of claim 1.

20. The use of the composition of claim 1 for imparting to an internal combustion engine an improvement in one or more performance properties selected from the group consisting of cleanliness, wear and exhaust emissions.

21. A composition comprising:
30 (a) a sulphur free reaction product of:
(i) a hydrocarbyl substituted aromatic compound containing a carboxyl and/or hydroxyl acidic group and selected from the group consisting of
(1) an oligomeric reaction product of a hydrocarbyl-substituted phenol, an

aldehyde, and a carboxyl-substituted phenol; (2) an oligomeric reaction product of a hydrocarbyl-substituted phenol, an aldehyde, and a carboxyl-substituted phenylamine; and mixtures thereof; and

(ii) an organic nitrogen-containing base reacted with the acidic
5 group of (a)(i).

22. The composition of claim 1 wherein the reaction product of component (a) is a reaction product of components (a)(i), (a)(ii) and (a)(iii) a metal-containing base.